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### Dissertation on the contra-indications of mercury

Nathaniel Bowen Cooke

*Yale University.*

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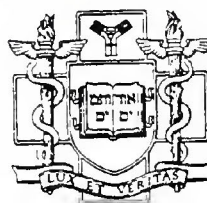


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VII.

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(Dissertation  
on  
The Contra-indications of Mercury.

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By  
Nathaniel Bowen Cooke, B.A. Brown Un.  
Of Bristol, Rhode Islands,  
Candidate for the Degree of Doctor in Medicine.

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On the Contra-indications  
of Mercury  
and the Limitations of its use.

The action of the preparations of mercury is, in general, stimulant, alterative and deobstruent, and irritant. They operate through the medium of the circulation, by nervous sympathy, and by direct contact. Their effects are variously modified by the particular preparation used, the mode and frequency of administration. When so administered as to affect the constitution, their primary action is the stimulant. This action is general upon the circulating system; the circulation becomes equal-



used; the pulse becomes quick, tense and sometimes full. Hence the great value of these medicines to obviate local congestions and topical inflammations.

Being introduced into the system, the next action of mercurials is <sup>deobstruent and</sup> attractive; and (in the case of some of the preparations) irritant. The action of the absorbent and the glandular systems is both altered and increased. The perspiration, the urine, the fluids of the alimentary canal, and more especially the saliva and the bile, become more abundant and are essentially changed in character. The blood presents the buffy coat and is of an increased consistence. Some of these consequences are so obvious as to be made the criteria of the constitutional effect of the medicine. Hence, as the best means of judging of its further indication, the saliva and the perspiration are carefully observed. The attractive virtues of mercury render it invaluable in many diseases, when nothing else affords a reasonable hope. In many affections of the liver it is of the greatest service; and in syphilis it takes rank as a specific, if indeed

any medicine can lay claim to such a title. It is ~~firstly~~ from its alterative action that it is of so much value, in minute doses, in diarrhoea and cholera.

Calomel, in doses of from ten to twenty grains, is highly valuable as a cathartic & counterirritant. It increases the peristaltic motion of the bowels by direct contact. [Thw, by producing catharsis, it also produces counter-irritation and so diverts the force of disease from other and distant parts.] If an equal quantity be divided and given at intervals of two or three hours, it acts in still another way upon the intestinal canal. It irritates the orifices of the ducts opening into it and thus by nervous sympathy excites the secretions which are subservient to the process of digestion.\* But the pure cathartic power, by increased peristaltic motion without affecting the secretions, may be secured by a large dose of calomel combined with twice the quantity of jalap. 'This compound will pass so rapidly through the intestines as to produce little or no effect on the secretions.'<sup>x</sup> Thw. in

<sup>x</sup> 'Ips' appendix to Hamilton. p. 201.



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many cases of obstinate constipation also, mercury is an important remedy.

In many ill-conditioned ulcers and in some cutaneous diseases, the topical application of some of the preparations of mercury, in powders, ointments or fumigations, are valuable alterants. The mercurial ointment produces, by <sup>its</sup> absorption, the same constitutional effects as when the mineral is taken internally. And in some conditions of the stomach and intestines this is the preferable form for its exhibition.

Such are the general principles on which mercury acts in producing its various salutary effects. It is not the purpose of this essay to enter upon the consideration of the particular diseases to which it is applicable, but to state the effects of its injudicious use, and to point out the restrictions under which it should be employed.

It has already been said that the first effect of mercury is to stimulate the heart and arteries. There is an altered condition of the whole circulating system. The blood is changed in character; an inflammatory diathesis is produced.

It is only necessary to conceive this state of the system to be <sup>aggravated</sup> exalted by some untoward circumstance, and the diathesis becomes disease. That febrile condition is induced which is called the 'mercurial fever'.

A febrile state of an atomic character, called [by Pearson] the 'mercurial erythema', is sometimes produced by mercury, and is one of the most alarming of its dangerous effects. "This state is characterized by great depression of strength, a sense of anxiety about the precordia, irregular action of the heart, frequent sighing, trembling, partial or universal, and a small, quick and sometimes intermitting pulse, occasional vomiting, a pale, contracted countenance, a sense of coldness; but the tongue is seldom furred, nor are the vital or natural functions much disordered."\* During this disease "a sudden and violent exertion of the animal powers will sometimes prove fatal." It generally comes on suddenly and before the physician is aware of its approach. This effect of mercury appears to be the poisonous action

\* Pearson quoted by 'Lectures on the venereal' apud p. 44.



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upon the constitution, affecting principally the nervous system.

Other evil effects arise from its action upon the glandular system. Though, as a general rule, we are to judge of the constitutional effects by the soreness of the gums and mouth and by the amount of salivation, yet there are cases in which there is an excessive secretion from some one of the secretory organs while the others are but little affected, and the constitution appears to receive no impression. In these cases, the organs usually so excited are the salivary glands. But excessive salivation is more commonly attended by an excess of mercurial influence through the whole glandular system, producing upon the constitution most disastrous consequences.

Instead of the usual tenderness of the gums, the metallic taste, ~~and~~ the fetid breath and the increased flow of saliva, ulceration now appears about the mouth and fauces, the tongue is so swollen that it hangs out of the mouth incapacitating the patient for either eating or speaking. The salivary glands are enlarged, inflamed and very painful, and

the flow of saliva becomes excessive and sometimes enormous. In one instance, sixteen pounds are said to have been evacuated in twenty-four hours. The gums though, the teeth drop out, and occasionally necrosis of the alveolar process takes place. The whole system partakes of the disease. The excessive drain of its fluids made by the excretory functions tends to impoverish every part of the animal economy. The blood thus impoverished by the excessive action of the organs of absorption, of secretion and of excretion, the consequences are obvious — irritability, debility, emaciation, death. The system is drained of its vitality, and if the patient escapes fatal hemorrhage by sloughing, death by inanition is the result. We have here represented one extreme case of this disease and one seldom witnessed. Yet such is the character and the tendency of excessive salivation, whether it occur in a milder form or whether it be allowed to go on to these distressing results.

An effect analogous to the last is that produced by excessive secretions from the liver, the pancreas and



the mucous membrane of the intestines. Violent purging  
colics, frequently attended with griping and san-  
guinous evacuations; also with fulness of the left hypo-  
chondrium, burning pain and tenderness of the region  
of the pancreas; and the evacuations are frothy, whit-  
ish, tough, and often greenish (at least in the com-  
mencement) from intestinal bile.\* Excessive secre-  
tion of urine and profuse sweating are other analogous ef-  
fects of the same cause. Enlargements of many of the  
glands are sometimes produced.

Another class of consequences is certain diseases of  
the skin. One of these is a peculiar eruption, known as the  
'mercurial erythema'. It occurs in the early periods of the  
mercurial course, and is accompanied by some slight in-  
dications of approaching ptyalism. It is attended by an  
unceasing sense of itching, and spreads widely over the limbs  
and body commencing usually in the groin and between  
the scrotum and the thighs. It is accompanied by  
slight fever, <sup>which</sup> depends for its degree and character upon  
the habits and constitution of the patient and  
the severity and duration of the eruption. This

\* Pereira. vol. 1. p. 588.

disease is not often severe.

Another and a more painful and trying disease of this class, and "allied perhaps to the foregoing", "is an excoriation of the skin on the corresponding surfaces of the scrotum and the thighs." "It commences in the angle between the thigh and the scrotum, and spreads over the entire extent of the opposed integument of those parts, and a profuse discharge of a very fetid nature takes place." "The patient is deprived of sleep by day and by night; but cannot attempt the slightest movement in the bed without inducing severe pain. The degree of attending fever also is very severe." <sup>x</sup>

Thickening and adhesion of serous membranes, particularly of the pericardium and <sup>the</sup> pleura costalis, also "partial adhesion and thickening of the cellular membrane in contact with the fasciae and extremities of the muscles" <sup>†</sup> are occasional consequences of the inflammatory diathesis induced by the exhibition of

<sup>x</sup> Collins on the venereal. p. 42.

<sup>†</sup> Hamilton on the Use and Abuse of Mercury.



mercury.

The effects of mercury upon the nervous system vary in different cases, from those comparatively slight to the most severe; and sometimes they continue through life, with irregular and feeble action of the heart and with all the distressing consequences of great nervous derangement, without, however, much disordering the vital functions.\*

From these consequences of the injudicious use of mercury (and from some others of less importance) it must be sufficiently evident that the mode of administering a medicine so potent for good or for ill, and its contra-indications should be understood by every practitioner. Unfortunately there are some cases in which the evil cannot be prevented, and therefore cannot be avoided. Some patients suffer the most severe symptoms from the most trifling dose of mercury, while others seem to be proof against the most powerful and persevering efforts to affect the system by it. <sup>It is</sup> Therefore a rule to

\* Hamilton on the Use & Abuse. p. 13.

guide us in discerning such idiosyncracies; and the only practical principle which can be suggested is that when mercury is to be administered to a patient for the first time, we should feel our way with the greatest caution, watching every step of its progress, before we proceed to such an exhibition of this remedy as is prudent in a large majority of instances. In almost all cases, however, a regard to certain general principles and ascertained facts will very materially aid us in avoiding disastrous consequences. By a neglect or ignorance of these alone can ~~then~~ such consequences often occur.

In the first place, then, when the character of the disease is such that mercurials seem to be strongly indicated, we are to consider the state of the patient's constitution, his temperament, his age, and the climate in which he resides. Residents in hot climates are very seldom severely affected by mercurial influences, though they are very susceptible to the constitutional effects of mercury. To them, therefore, mercury is both a safer and a surer remedy than with us. In very young patients the exhibition of mercury is very seldom otherwise than



perfectly safe. It is doubtful whether a child of less than two or three years is ever salivated. After this, the susceptibility to the constitutional action of mercury is gradually increased. A nervous condition or temperament is in some degree a contra-indication to the exhibition of mercury. The action of mercury is sometimes, as before mentioned, violent upon the nervous system, producing permanent and distressing effects, and sometimes bringing on paralysis, epilepsy or mania. Hence in delicate, nervous females, this remedy should be used with particular caution. In cases of extraordinary morbid action, however, as in mania, when dependent on disease of the liver and the alimentary canal, and in tetanus, mercury is said to have been employed with good results.

But the circumstance to be most carefully attended to is the state of the pulse. Mercury is contra-indicated either by a morbid force and activity of the arterial system, or by a very feeble action of that system. A pulse somewhat less full and quick than that of health is probably the most favorable indication for its exhibition. Hence, in the catarrhic stage

of inflammatory diseases it cannot be used with advantage until the system has been reduced. This reduction is usually to be accomplished by the use of the lancet, or by cathartics, or by both. Or, if such measures are contraindicated, and especially if the perspiration and the other secretions are deficient, antimony may be exhibited in combination with calomel, sometimes with the happiest results. The antimony is here valuable both for its influence upon the secretions and upon the arterial action. But unless some means can effect a reduction of the tonic action, mercury in any form can be exhibited with but little hope of benefit.

On the other hand, in a state of debility indicated by a very feeble pulse, this remedy should either be delayed until the system is strengthened by a course of tonic treatment, or it should be employed in combination with tonics. The iodide of mercury is especially recommended in scrofulous affections. By such means, the constitution which would have successfully resisted every attempt to control it by mercury may be induced to yield readily to the power of that agent, and the disease is effectually dis-



armed and subdued.

There is another consideration, possibly of some weight, to show the importance of securing such a condition of the constitution as shall give promise of success, before applying the mercurial treatment. It is stated that a large amount of mercury has sometimes been thrown into the system without producing at the time the slightest apparent influence; and when by accidental circumstances the constitution has undergone some change, immediately violent mercurialization has followed; and that at a time when such an effort could produce only mischief. This fact (if allowed to be a fact) would also suggest the importance of withholding mercury as soon as we have evidence that the system is not for the time impassible by it. We should not be likely, in attempting to subdue an enemy, to incur more expense and more hazard than would suffice either to conquer him or to prove him invincible.

The debility of strongly morbid scrofula, however, is a decided contra-indication of this medicine, and refuses to give way even to the prepor-

atory measure by tonics sufficiently to render mercurials of any avail. But it is a valuable remedy in cases of scrofula having a syphilitic origin, if administered before the system becomes very much reduced.

The internal exhibition of mercury is contraindicated by great irritability of the stomach or the intestinal canal. Even under these circumstances, however, its virtues are still available in the form of the ointment applied to the inside of the thighs or to some other part of the surface where the skin is thin. But even in this mode of application, its influence on the intestinal canal is sometimes so violent as to compel its discontinuance.

It may be in place here to remark that when, in its internal use there is danger of losing its constitutional effects in consequence of its running off by the bowels, this event is very commonly prevented by its combination with opium. And when, on the other hand we wish to avoid its constitutional effects, it should be combined with jalap or some other vegetable cathartic, should be followed in the course of eight or ten



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Arms by a different purgative, and should not be repeated too soon.

Another circumstance, which should put us on our guard against the too violent action of mercury, is the existence of ill-conditioned ulcers, caries, scrofulous sores, scirrhus tumors and cancerous affections in the patient. In some stages of those affections they must be aggravated by the diminished vitality consequent upon the exhibition of this medicine.

Having decided upon the exhibition of mercury, our next care is to proceed with proper precautions. If the object is to bring the constitution under the influence of the medicine, it is usually proper to give small doses - say of calomel about grs. j-ij, or of the blue pill about grs. jx, - repeating the dose once, twice or three times a day, until a slight soreness of the gums occurs. This usually happens in from six to ten days. It is sufficient to shew the constitution to be under the influence of our remedy. The same treatment is to be <sup>either</sup> continued, or suspended for a time

and then resumed, or at once and entirely abandoned, according to circumstances.

If we have no means of judging beforehand of the particular susceptibility of the patient, (and we can have none, if he has never tried the experiment) prudence may require us to commence with doses smaller than this and to increase them gradually if they do not operate unfavorably. Whenever symptoms of an unfavorable action appear, the medicine should be immediately discontinued. But, ordinarily, when ptyalism is once fairly induced, we have no reason, with proper precautions, to apprehend any mischievous result. We may proceed boldly, but prudently, to keep up the ptyalism as long, or to push it as far, as is necessary to effect our purpose in its exhibition.

From the inflammatory diathesis induced by mercurial treatment, it is easy to infer that all temporary and accidental causes of inflammation must be avoided while under that treatment. This caution is said to be of the utmost importance to secure to the patient the



safe and effectual employment of the remedy. Every thing which will predispose the system to be impressed by revitalizing agents must be studiously avoided. Especially will this remark apply to all exposures to cold and moisture and great alterations of temperature, to irregularities and excesses of all kinds, to stimulating food and to impure air. The daily use of the warm bath during the same period has also been highly recommended. The clothing should be daily changed and thoroughly cleansed and aired. Vegetable diluents should be freely drunk. And after the mercurial course is finished, the patient should still continue the same precautions, for two weeks or more, returning by gradual advances to his usual exercise and exposure.

These observations, it is believed, embody the general principles of the contra-indications of mercury and the limitations of its use. Instead of being an agent always to be dreaded and avoided, as some have been led, by its abuse and its injudicious use, to believe, it may be, and

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it is, in the hands of the prudent and sagacious  
practitioners, an agent of good to suffering human-  
ity, the loss of which would be irreparable.

N. B. Cooke  
New Haven. Jan. 20. 1847.





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